

PCT REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For Receiver's Office use only	
PCT/US 00/23878	
International Application Number	
(30.08.00)	30 AUG 2000
International Filing Date	
PCT INTERNATIONAL	
Name of receiving Office and "PCT International Application"	
Applicant's or Agent's file reference (if desired) (12 characters maximum) 960296.96617	

Box No. I TITLE OF INVENTION

Production of 3-Hydroxypropionic Acid in Recombinant Organisms ✓

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Wisconsin Alumni Research Foundation
614 Walnut Street - 13th Floor
P O Box 7365
Madison, WI 53707-7365 US

☐ This person is also inventor.

Telephone No.:
608/263-2500

Facsimile No.:
608/263-1064

Teleprinter No.:

State (that is, country) of nationality: US

State (that is, country) of residence: US

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER INVENTOR(S))

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

SUTHERS, Patrick F.
806 Olin Avenue, Apt. 1
Madison, WI 53715 US

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (if this check-box is marked, do not fill in below.)

State (that is, country) of nationality: US

State (that is, country) of residence: US

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

SEAY, Nicholas J.
Quarles & Brady LLP
P O Box 2113
Madison, WI 53701-2113 US

Telephone No.:
608/251-5000

Facsimile No.:
608/251-9166

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Sheet No. 2

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER INVENTOR(S))				
<i>If none of the following sub-boxes is used, this sheet should not be included in the request.</i>				
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) CAMERON, Douglas C. 3590 Rainier Lane North Plymouth, MN 55447 US			This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (if this check-box is marked, do not fill in below.)	
State (that is, country) of nationality: US		State (that is, country) of residence: US		
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box				
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) 			This person is: <input type="checkbox"/> applicant only <input type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (if this check-box is marked, do not fill in below.)	
State (i.e. country) of nationality:		State (i.e. country) of residence:		
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box				
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) 			This person is: <input type="checkbox"/> applicant only <input type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (if this check-box is marked, do not fill in below.)	
State (i.e. country) of nationality:		State (i.e. country) of residence:		
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box				
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) 			This person is: <input type="checkbox"/> applicant only <input type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (if this check-box is marked, do not fill in below.)	
State (i.e. country) of nationality:		State (i.e. country) of residence:		
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box				

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box N . V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP** **ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, MZ Mozambique; SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** **Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** **European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** **OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of the OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line).....

National Patent (if other kind of protection to treatment desired, specify on dotted line):

- | | |
|---|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates | <input checked="" type="checkbox"/> LC Saint Lucia |
| <input checked="" type="checkbox"/> AG Antigua and Barbuda | <input checked="" type="checkbox"/> LK Sri Lanka |
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LR Liberia |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MA Morocco |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BZ Belize | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> MZ Mozambique |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CR Costa Rica | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DM Dominica | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> DZ Algeria | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TZ United Republic of Tanzania |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZA South Africa |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | Check-box reserved for designating States which have become party to the PCT after issuance of this sheet: |
| <input checked="" type="checkbox"/> KR Republic of Korea | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> KZ Kazakhstan | <input type="checkbox"/> |

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Box N . VI PRIORITY CLAIM					[] Further priority claims are indicated in the Supplemental Box				
Filing Date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:							
		national application country	regional application* regional Office	international application receiving Office					
item (1) (30/08/99) 30 AUG 1999	60/151,440	US							
item (2)									
item (3)									

[X] The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): US

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(i)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen, the two-letter code may be used): <u>ISA / US</u>	Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority): Date (day/month/year) Number: Country (or regional Office):
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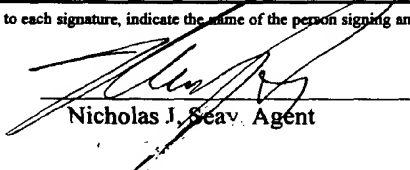
Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets: request : 4 description (excluding sequence listing part) : 17 claims : 3 abstract : 1 drawings : 0 sequence listing part of description : 41 Total number of sheets : 66	This international application is accompanied by the item(s) marked below: 1. [X] fee calculation sheet 2. [] separate signed power of attorney 3. [] copy of general power of attorney; reference number, if any; 4. [] statement explaining lack of signature 5. [] priority document(s) identified in Box No. VI as item(s): 6. [] translation of international application into (language): 7. [] separate indications concerning deposited microorganisms or other biological material 8. [] nucleotide and/or amino acid sequence listing in computer readable form 9. [X] Other (specify): Postcard Receipt
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Figure of the drawings which should accompany the abstract :	Language of Filing of the international application: English
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Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).


 Nicholas J. Seav. Agent

30.08.00

For receiving Office use only		525 Rec'd PCT/PTO 30 AUG 2000
1. Date of actual receipt of the purported international application:	2. Drawings [] received [] not received	
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (If two or more are competent) <u>ISA/US</u>	6. [] Transmittal of search copy delayed until search fee is paid	


Date of receipt of the record copy by the International Bureau:	For International Bureau use only
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POWER OF ATTORNEY

The undersigned, Douglas C. Cameron, hereby appoints Nicholas J. Seay of Quarles & Brady LLP as his attorney and agent with respect to the international patent application filed under the Patent Cooperation Treaty in the U.S. Patent and Trademark Office for PCT/US00/23878 (and for European and national applications derived therefrom). Said attorney is hereby granted full power of substitution and revocation with respect to said patent applications and to make alterations and amendments therein, to receive all certificates and other documents relating to such applications, to receive and make payments on his behalf in connection therewith, and to transact all the business requisite for the establishment and protection of his patent rights in connection therewith.

Navarre
Signed at ~~North Plymouth~~, Minnesota, U.S. this 10 day of October, 2000.

By:


Douglas C. Cameron

POWER OF ATTORNEY

The undersigned, Patrick F. Suthers, hereby appoints Nicholas J. Seay of Quarles & Brady LLP as his attorney and agent with respect to the international patent application filed under the Patent Cooperation Treaty in the U.S. Patent and Trademark Office for PCT/US00/23878 (and for European and national applications derived therefrom). Said attorney is hereby granted full power of substitution and revocation with respect to said patent applications and to make alterations and amendments therein, to receive all certificates and other documents relating to such applications, to receive and make payments on his behalf in connection therewith, and to transact all the business requisite for the establishment and protection of his patent rights in connection therewith.

Signed at Madison, Wisconsin, U.S. this 9th day of October, 2000.

By: Patrick F. Suthers
Patrick F. Suthers

POWER OF ATTORNEY

PCT/US 00/23878
RO/US 16 OCT 2000

The undersigned, Bryan Z. Renk, Director of Patents and Licensing of Wisconsin Alumni Research Foundation, hereby appoint Nicholas J. Seay of Quarles & Brady LLP as its attorney and agent with respect to its international patent application filed under the Patent Cooperation Treaty in the U.S. Patent and Trademark Office for PCT/US00/23878 (and for European and national applications derived therefrom). Said attorney is hereby granted full power of substitution and revocation with respect to said patent applications and to make alterations and amendments therein, to receive all certificates and other documents relating to such applications, to receive and make payments on its behalf in connection therewith, and to transact all the business requisite for the establishment and protection of its patent rights in connection therewith.

Signed at Madison, Wisconsin, U.S. this 4th day of October, 2000.

WISCONSIN ALUMNI RESEARCH FOUNDATION

By:

Bry-Z L
Bryan Z. Renk

Title: Director of Patents and Licensing

PCT

For receiving Office use only

FEE CALCULATION SHEET

PCT/US 00/23878

International application no.

Annex to the Request

Applicant's or agent's file reference 960296.96617

Date stamp of the receiving Office

30 AUG 2000

Applicant: Wisconsin Alumni Research Foundation

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE

240.00

T

2. SEARCH FEE

700.00

S

International search to be carried out by US
 (If two or more International Searching Authorities are competent in relation to the international application indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

Basic Fee

The international application contains 66 sheets.

first 30 sheets

427.00

b₁
36 X 10 =
 remaining sheets additional amount

360.00

b₂Add amounts entered at b₁ and b₂ and enter total at B

787.00

B

Designation Fee

The international application contains 84 designations.
11 X 92 =
 number of designation fees payable (maximum 8) amount of designation fee

1012.00

D

Add amounts entered at B and D and enter total at I

1799.00

I

(Applicants from certain States are entitled to a reduction of 75% of the international fee.
 Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT (if applicable)

15.00

P

5. TOTAL FEES PAYABLE

2754.00

Add amounts entered at T, S, I and P, and enter total in TOTAL box

TOTAL

☐ The designation fee is not paid at this time

MODE OF PAYMENT

☒ authorization to charge deposit account (see below)☐ bank draft☐ coupons☐ cheque☐ cash☐ other (specify):☐ postal money order☐ revenue stamps

DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment may not be available at all receiving Offices)

The RO/ US☒ is hereby authorized to charge the total fees indicated above to my deposit account.☒ (this check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.☒ is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.17-0055

Deposit Account Number

August 30, 2000

Date (day/month/year)

Signature Nicholas J. Seay

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: NICHOLAS J. SEAY
QUARLES & BRADY LLP
P. O. BOX 2113
MADISON, WI 53701-2113

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 960296.96617	Date of Mailing (day/month/year) 20 NOV 2000
International application No. PCT/US00/23878	International filing date (day/month/year) 30 AUGUST 2000
Applicant WISCONSIN ALUMNI RESEARCH FOUNDATION	

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.
Filing of amendments and statement under Article 19:
 The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

 Where? Directly to the International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland
 Facsimile No.: (41-22) 740.14.35

 For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:
 Shortly after 18 months from the priority date, the international application will be published by the International Bureau.
 If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.

 Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

 Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Authorized officer
TEKCHAND SAIDHA

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 960296.96617	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> FOR FURTHER ACTION </div> <div> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. </div> </div>
International application No. PCT/US00/23878	<div style="display: flex; justify-content: space-between;"> <div> International filing date (<i>day/month/year</i>) 30 AUGUST 2000 </div> <div> (Earliest) Priority Date (<i>day/month/year</i>) 30 AUGUST 1999 </div> </div>
Applicant WISCONSIN ALUMNI RESEARCH FOUNDATION	

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
2. ☐ Certain claims were found unsearchable (See Box I).
3. ☐ Unity of invention is lacking (See Box II).
4. With regard to the title,

☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is Figure No. ____

☐ as suggested by the applicant.
☐ because the applicant failed to suggest a figure.
☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/23878

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12P 7/22; C12N 9/02, 9/14, 1/20, 15/00
US CL : 435/155, 189, 195, 252.3, 320.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/155, 189, 195, 252.3, 320.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

West; STN files included medline, caplus, uspatfull, embase, scisearch, biosis and biotechds

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	TANG et al. Immunochemical Properties of NAD ⁺ - Linked Glycerol Dehydrogenases from Escherichia coli and Klebsiella pneumoniae. Journal of Bacteriology. December 1982, Vol. 152, No. 3, pages 1169-1174, see the entire article.	1-12
A	BARBIRATO et al. Anaerobic pathways of glycerol dissimilation by Enterobacter agglomerans CNCM 1210: limitations and regulations. Microbiology. 1997, Vol. 143, No. 7, pages 2423-2432.	1-12

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A document defining the general state of the art which is not considered to be of particular relevance	*X	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*E earlier document published on or after the international filing date	*Y	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*&	document member of the same patent family
*O document referring to an oral disclosure, use, exhibition or other means		
*P document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

16 OCTOBER 2000

Date of mailing of the international search report

20 NOV 2000

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT

Authorized officer

TEKCHAND SAIRHA